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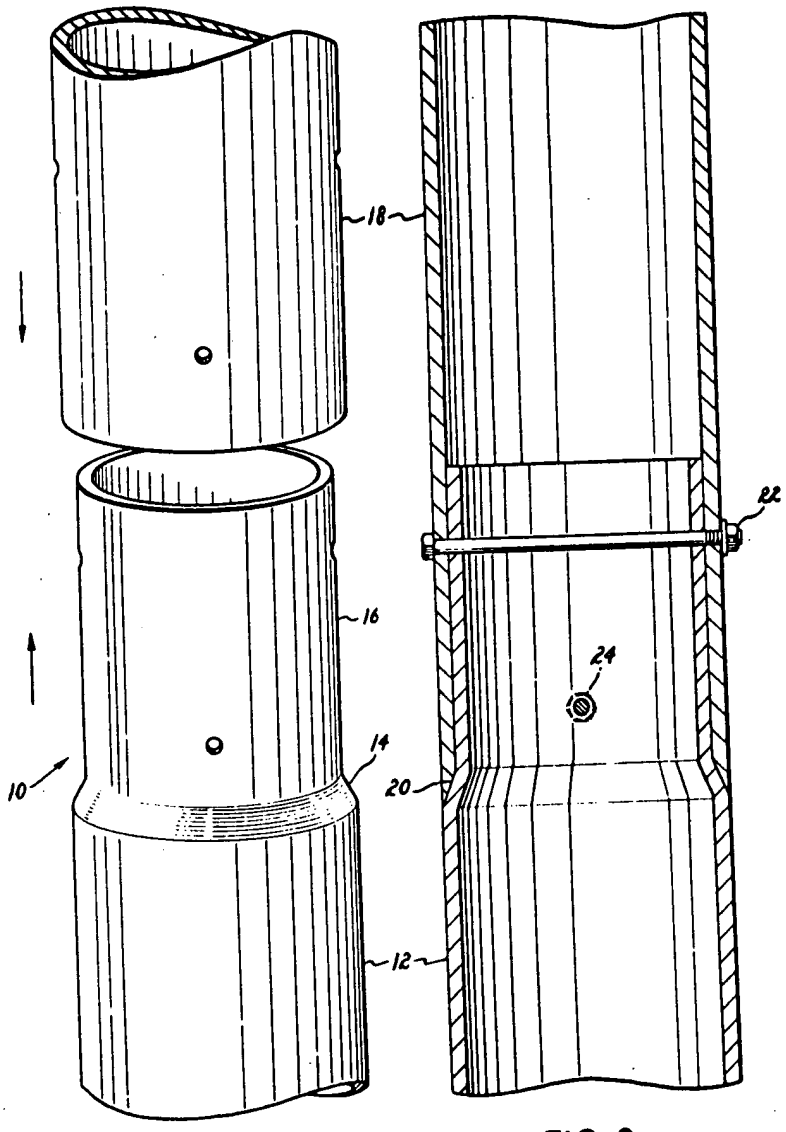

FIG. 1

FIG. 2

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JOINT FOR METAL POLES

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No. OF CLAIMS 2

This invention relates to the manufacture of metal poles for light standards and the like, and is particularly concerned with means for connecting together sections of such poles.

The joining means which is the subject of this invention has particular utility in connecting lengths of tapered aluminum poles. However, it is to be understood that the utility of the invention is not restricted to such use. As will be explained hereinafter, the joint in accord with the invention may also be used to good advantage in connecting sections of other metal poles, whether tapered or straight.

Prior to the present invention, it has been common practice to connect sections of metal poles by means of an internal sleeve which is usually plug-welded to one of the members to be connected prior to shipping. The sections are joined at the time the pole is erected on the site by telescoping the second member on the sleeve, where it is held in place by one or more bolts extending through the second member and the received sleeve. This practice suffers several disadvantages. As a result of the plug-welding operation, both the sleeve and the member to which it is welded are annealed with resultant weakening. Further, it has been found that the plug welds darken in service, and destroy the overall appearance of the pole. For the type of aluminum pole used for light standards, the inner sleeve must be about 24" long, so that the cost of the known joints are quite high due to material costs alone. These high costs are increased due to the time required to carry out the plug-welding, including drilling the holes and grinding the welds to a reasonable finish. Further, the plug welding operation requires refinishing the pole section concerned. It also has been found that water can enter the abutting ends of the pipe whereby to cause additional disfiguration and weakening of the joints.

Finally, where the pole is of the tapered type, the use of a long internal sleeve detracts from the overall appearance of the completed pole, as the pole is straight over the length of the joint.

The above disadvantages of the known method of connecting metal pole sections are overcome in accord with the present invention by forming one end of the pole sections to be joined with an integral sleeve. The latter is provided with a first short tapered extent spaced from the mouth of the pole section concerned, and a relatively long extent of constant diameter extending from the short tapered extent to the mouth. The other pole section, which receives the integral sleeve, is provided with a bevelled extent immediately adjacent its mouth with the slope and axial length of the bevelled extent substantially equalling the slope and axial length of the tapered extent of the integral sleeve. As is fully explained hereinafter, this joint construction avoids the disadvantages of the known joining methods, partly due to the elimination of all plug-welding operations. The latter are not required due to the forming of the sleeve as an integral portion of one of the pole sections.

The invention will be more thoroughly understood from the following description of a preferred embodiment thereof as read in conjunction with the accompanying drawings.

In the drawing which illustrates this embodiment of the invention,

Figure 1 is a perspective view of the end portions of two pole sections to be joined, with the end portions spaced apart as to show their appearance prior to the joining operation, and

Figure 2 is a cross-section view through a finished joint in accord with the invention with the end portions illustrated in Figure 1 telescoped and fixed together.

The drawings illustrate end portions of tapered aluminum

pole sections. Aluminum pole material is tapered from straight constant diameter extruded stock. By means of specially designed tapering lathes, the stock is rotated about its longitudinal axis and a tapering tool is run along the length of the pole against its outer surface, while being progressively forced radially inward. In accord with the present invention, the integral sleeve 10 is formed on the end of the pole length 12 at the time the pole is tapered. Thus, the provision of the sleeve 10 is a relatively simple matter in the manufacture of tapered poles, and the invention is accordingly particularly adapted to tapered poles. The sleeve or end portion 10 of pole section 12 consists of two parts, a first short tapered extent 14 spaced from the mouth of the pole section concerned, and a relatively long extent 16 of constant diameter extending from the tapered extent 14 to the said mouth. As can best be seen in Figure 2, the outer pole section end portion 18 is provided with an internal bevelled extent 20 immediately adjacent its mouth. This bevelled extent 20 substantially corresponds in axial length and slope to the tapered extent 14 of the other pole section.

To lock the telescoped pole sections, a pair of bolt assemblies 22 and 24 are arranged to extend through sleeve 10 and the outer pole section end 18 at right angles to each other. As will be readily appreciated, alternative locking means can be employed to accomplish the same purpose. However, as it is usual to join the sections at the site in order to avoid shipping complete poles, the bolt and nut locking system is preferred, due to its simplicity.

While the joining method in accord with this invention achieves a strong joint at relatively small cost compared to the prior joining methods, it is also quite superior in appearance. In a tapered light standard such as the type employed for highway and shopping centre lighting, the integral sleeve need only be about

12" long, so that there is a relatively short, straight extent at the joint, as compared with the 24" straight section on the prior joints. Further, the elimination of the plug welds avoids the deterioration at the welds encountered in the prior joints, where the welds darken in service and appear as spots on the pole. Additionally, with the elimination of a straight butt joint between the mouths of the two pole sections, the tendency for water to enter the joint is prevented.

The joint structure in accord with the invention further improves on the known joining methods by the manner in which any two pole sections can be joined with good results, whereas the prior joint quite often required custom fitting to accomplish the same result.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A joint for connecting two sections of a metal pole, said joint comprising telescoped end portions of said pole sections in which the inner one of said end portions has a first part consisting of a relatively short tapered extend spaced from the mouth of said inner portion, and a second part consisting of a relatively long sleeve-like extent of substantially constant diameter and extending from said first tapered part to the mouth of said inner portion; the outer one of said end portions having an internal bevelled extent immediately adjacent its mouth, said bevelled extent having an axial length and slope substantially equal to the axial length and slope of the said tapered extent of said inner portion, said bevelled and tapered extents being arranged in juxtaposition with each other, and means for holding said pole sections in their telescoped relationship as to prevent both axial and rotational movement thereof.

2. A joint for connecting two sections of a tapered aluminum pole adapted to be mounted in an upright position, said joint comprising telescoped end portions of said pole sections in which the lower section is telescoped within the upper section, the end portion of said inner lower section having a first short tapered extent spaced from the mouth of said inner end portion and a second relatively long sleeve-like extent of substantially constant diameter extending from said short tapered extent to said mouth of the inner end portion, the upper outer end portion having an internal bevelled extent immediately adjacent the mouth thereof, said bevelled extent having an axial length and slope substantially equal to the axial length and slope of the tapered extend of said inner lower end portion, said bevelled and tapered extents being

arranged in juxtaposition with each other, and a pair of transverse nut and bolt assemblies extending at right angles to each other through said outer upper end portion and the sleeve-like extent of said inner lower end portion whereby to lock said telescoped end portions against relative axial and rotational movement.